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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/482,327	01/14/2000	Jeffrey Dwork	52352-314	6835

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EXAMINER
PARTON, KEVIN S

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/482,327	DWORK ET AL.	
	Examiner	Art Unit	
	Kevin Parton	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 14 January 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it exceeds the maximum allowed number of words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Chong et al. (USPN 6,212,582).

5. Regarding claim 1, Chong et al. (USPN 6,212,582) teach a system comprising:

a. A local bus (figure 1).

b. A host processor coupled to the local bus (column 4, lines 39-40).

c. A network interface for providing an interface between the local bus and a network medium (figure 1). Note that figure 1 has a receiving and transmitting node at reference number 45. The reference teaches a system for congestion control in a networked device.

d. A memory coupled to the local bus, the memory having receive buffers allocated for receiving data from the network medium (figure 1, reference number 60a)

e. The network interface including an automatic flow control mechanism for automatically controlling a flow of data from the network medium based on availability of the receive buffers (column 3, lines 1-8; column 4, lines 26-30). Note that in the reference, the flow control scheme is based on traffic with multiple priority levels. The concept for a single priority level would be the same.

6. Regarding claim 2, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 1, they further teach means wherein in a first flow control mode, the automatic flow control mechanism is configured to respond to a shortage of the receive buffers by automatically requesting a remote transmitter coupled to the network medium to suspend data transmission until a predetermined number of the receive buffers is available (column 4, lines 26-30; column 7, lines 27-30). Note that in the reference for a single priority level, when the capacity of an available buffer is less than a threshold value, a signal is sent to the transmitting node to stop

transmission. When the occupancy of the buffer drops below a second, lower threshold, the flow control is deactivated and transmission resumes.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chong et al. (USPN 6,212,582) in view of Ramakrishnan (USPN 6,167,029).

9. Regarding claim 3, although the system disclosed by Chong et al. (USPN 6,212,582) (as applied to claim 2) shows substantial features of the claimed invention, it fails to disclose means wherein in a second flow control mode, the automatic flow control mechanism is configured to respond to a shortage of the receive buffers by automatically requesting the remote transmitter coupled to the network medium to suspend data transmission for a predetermined time.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Ramakrishnan (USPN 6,167,029).

In an analogous art, Ramakrishnan (USPN 6,167,029) discloses a system for activation of flow control based on the availability of buffers wherein the automatic flow control mechanism is configured to respond to a shortage of the receive buffers by automatically requesting the remote transmitter coupled to the network medium to suspend data transmission for a

predetermined time (column 8, lines 28-33). Note that the PAUSE frame is set for a pre-determined period of time, after which flow resumes regardless of the status of the buffers.

Given the teaching of Ramakrishnan (USPN 6,167,029), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of a timer to determine when transmission from the transmitting node can resume. In a system where processing of incoming data takes place at a constant rate, it is not necessary to have a buffer notify the transmitting node when it is below a certain threshold. In this situation, the transmitting node can wait a pre-determined time and then resume transmission with a high certainty level of finding the buffer in a level below the threshold. The system benefits by not having to spend processor time measuring the lower threshold of the buffer and then sending a message to the transmitting node. This saves processor time and network congestion. The benefit of having both the lower threshold and the time-based resumption of transmission can be used to differentiate between buffers utilized for different purposes. Those in extremely high traffic and critical applications may need to use the former, the lower priority applications may use the time-based method.

10. Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) as applied to claim 3 above, and further in view of Fox (USPN 6,185,438).

11. Regarding claim 4, although the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) (as applied to claim 3) shows substantial features of the claimed invention, it fails to disclose means wherein the network interface comprises a descriptor management unit for managing receive descriptors pointing to the receive buffers.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers comprising means wherein the network interface comprises a descriptor management unit for managing receive descriptors pointing to the receive buffers (column 6, lines 33-35, 63-64; column 7, lines 5-6). Note that in the reference, the descriptors are used to determine when no buffers are available and thus no transmitted data can be received.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) by employing the use of descriptors to monitor the buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

12. Regarding claim 5, although the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) (as applied to claim 4) shows substantial features of the claimed invention, it fails to disclose means wherein the automatic flow control mechanism is configured to detect availability of the receive buffers by monitoring the number of available descriptors pointing to the receive buffers available for receiving data from the network medium.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers comprising means wherein the automatic flow control mechanism is configured to detect availability of the receive buffers by monitoring the number of available descriptors pointing to the receive buffers available for receiving data from the network medium (column 6, lines 33-35, 63-64; column 7, lines 5-6).

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) by employing the use of descriptors to monitor the buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer. It is obvious that when the number of descriptors pointing to available buffers dropped below a certain value, the flow control would be activated. This benefits the system by stopping the transmission of new data that would be lost if sent to unavailable buffers.

13. Regarding claim 6, Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) teach all the limitations as applied to claim 5. Chong et al further teach means wherein in the first flow control mode, the automatic flow control mechanism is configured to automatically request the remote transmitter to suspend data transmission when the available buffer capacity falls below a first threshold value (column 4, lines 26-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) shows substantial features of the claimed invention, it fails to disclose means wherein the request to suspend transmission based on the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers using available descriptors (column 6, lines 33-35, 63-64; column 7, lines 5-6).

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) by employing the use of descriptors to monitor the buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer. It is obvious that when the number of descriptors pointing to available buffers dropped below a certain value, the flow control would be activated. This benefits the system by stopping the transmission of new data that would be lost if sent to unavailable buffers.

14. Regarding claim 7, Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) teach all the limitations as applied to claim 6. Chong et al further teach means wherein in the first flow control mode, the automatic flow control mechanism is configured to enable the remote transmitter to resume data transmission when the available buffer capacity rises above threshold value (column 7, lines 26-30). Note that although in the reference, the function is based on priority, it is applicable for a system with no priority assigned to data streams.

Although the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) shows substantial features of the claimed invention, it fails to disclose means wherein the enable message for transmission is based on the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers using available descriptors (column 6, lines 33-35, 63-64; column 7, lines 5-6).

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) by employing the use of descriptors to monitor the buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer. It is obvious that when the number of descriptors pointing to available buffers increased above a certain value, the flow control would be deactivated. This benefits the system by resuming transmission of data as quickly as possible while keeping the possibility of lost data to a minimum.

15. Regarding claim 8, Chong et al. (USPN 6,212,582), Ramakrishnan (USPN 6,167,029), and Fox (USPN 6,185,438) teach all the limitations as applied to claim 7. Chong et al. (USPN 6,212,582) further teach means wherein the second threshold value is higher than the first threshold value (column 7, lines 27-30; column 4, lines 26-30). Please note that in the reference,

the monitor is assessing the level of filled capacity in the buffer. While the first threshold is higher than the second, fundamentally, they are measuring the same thing. If referred to as availability rather than occupied space in the buffer, the concept would be the same.

16. Regarding claim 9, Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) teach all the limitations as applied to claim 5. Chong et al further teach means wherein in the second flow control mode, the automatic flow control mechanism is configured to automatically request the remote transmitter to suspend data transmission when the available buffer capacity falls below a first threshold value (column 4, lines 26-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) shows substantial features of the claimed invention, it fails to disclose means wherein the request to suspend transmission based on the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers using available descriptors (column 6, lines 33-35, 63-64; column 7, lines 5-6).

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) by employing the use of descriptors to monitor the buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values

central for all buffers instead of requiring that it be done for each individual buffer. It is obvious that when the number of descriptors pointing to available buffers dropped below a certain value, the flow control would be activated. This benefits the system by stopping the transmission of new data that would be lost if sent to unavailable buffers.

17. Regarding claim 10, Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) teach all the limitations as applied to claim 9. Ramakrishnan (USPN 6,167,029) further teaches means wherein in the second flow control mode, the automatic flow control mechanism is configured to enable the remote transmitter to resume data transmission after a preprogrammed time interval, if the number of available descriptors is not less than the preprogrammed threshold value (column 8, lines 28-33). Note that the PAUSE frame is set for a pre-determined period of time, after which flow resumes regardless of the status of the buffers.

Given the teaching of Ramakrishnan (USPN 6,167,029), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of a timer to determine when transmission from the transmitting node can resume. In a system where processing of incoming data takes place at a constant rate, it is not necessary to have a buffer notify the transmitting node when it is below a certain threshold. In this situation, the transmitting node can wait a pre-determined time and then resume transmission with a high certainty level of finding the buffer in a level below the threshold. The system benefits by not having to spend processor time measuring the lower threshold of the buffer and then sending a message to the transmitting node. This saves processor time and network congestion. The benefit of having both the lower threshold and the time-based resumption of transmission can be used to differentiate between buffers utilized for

different purposes. Those in extremely high traffic and critical applications may need to use the former, the lower priority applications may use the time-based method.

18. Regarding claim 11, although the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) (as applied to claim 5) shows substantial features of the claimed invention, it fails to disclose means wherein the network interface is configured to store information indicating a read pointer of the host processor that points to a next descriptor that should be processed by the host processor after a current receive buffer is read by the host processor.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers comprising means wherein the network interface is configured to store information indicating a read pointer of the host processor that points to a next descriptor that should be processed by the host processor after a current receive buffer is read by the host processor. (column 6, lines 33-35, 63-64; column 7, lines 5-6). Note that in the reference, the descriptors are used to determine when no buffers are available and thus no transmitted data can be received.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) and Ramakrishnan (USPN 6,167,029) by employing the use of descriptors to monitor the buffers. The descriptors are read in an order processed by the network interface. This

benefits the system by giving it an order with which to evaluate the buffers. In doing this, the probability of having a buffer overflow between monitoring times is decreased.

19. Claims 12-17, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chong et al. (USPN 6,212,582) in view of Fox (USPN 6,185,438).

20. Regarding claim 12, Chong et al. (USPN 6,212,582) teach a system comprising:

a. An automatic flow control mechanism for automatically performing flow control in accordance with the available receive buffer capacity for receiving data from the network medium (column 3, lines 1-8; column 4, lines 26-30)

Although the system disclosed by Chong et al. (USPN 6,212,582) shows substantial features of the claimed invention, it fails to disclose:

a. A descriptor management unit for managing receive descriptors pointing to receive buffers allocated to receive data from the network medium.

b. Monitoring the number of available receive descriptors pointing to the receive buffers available for receiving data from the network medium.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers comprising:

a. A descriptor management unit for managing receive descriptors pointing to receive buffers allocated to receive data from the network medium (column 6, lines 33-35, 63-64; column 7, lines 5-6).

b. Monitoring the number of available receive descriptors pointing to the receive buffers available for receiving data from the network medium (column 7, lines 5-6).

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of descriptors to monitor the available buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

21. Regarding claim 13, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 12. They further teach means wherein the receive buffers are arranged in a memory of the computer system (figure 1).

22. Regarding claim 14, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 12. They further teach means wherein the automatic flow control mechanism is configured to automatically request a remote station in the data network to suspend data transmission when the available buffer capacity falls below a first threshold value (column 4, lines 26-30; column 7, lines 27-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) shows substantial features of the claimed invention, it fails to disclose means for monitoring the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers utilizing descriptors for the representation of buffer status.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of descriptors to monitor the available buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

23. Regarding claim 15, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 14. They further teach means wherein the automatic flow control mechanism is configured to enable a remote station to resume data transmission when the available buffer capacity rises above a second threshold value (column 4, lines 26-30; column 7, lines 27-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) shows substantial features of the claimed invention, it fails to disclose means for monitoring the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers utilizing descriptors for the representation of buffer status.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of descriptors to monitor the available buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

24. Regarding claim 16, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 15. They further teach means wherein the second threshold value is higher than the first threshold value (column 7, lines 27-30; column 4, lines 26-30). Please note that in the reference, the monitor is assessing the level of filled capacity in the buffer. While the first threshold is higher than the second, fundamentally, they are measuring the same thing. If referred to as availability rather than occupied space in the buffer, the concept would be the same.

25. Regarding claim 17, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 12. They further teach means wherein the automatic flow control mechanism is configured to automatically request a remote station in the data network to suspend data transmission when the available buffer capacity falls below a preprogrammed threshold value (column 4, lines 26-30; column 7, lines 27-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) shows substantial features of the claimed invention, it fails to disclose means for monitoring the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers utilizing descriptors for the representation of buffer status.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of descriptors to monitor the available buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

26. Regarding claim 19, Chong et al. (USPN 6,212,582) teach a system comprising means for:

a. Automatically requesting a remote station in the data network to suspend data transmission when the amount of available buffer capacity falls below a first preprogrammed threshold level (column 4, lines 26-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) shows substantial features of the claimed invention, it fails to disclose:

a. Monitoring the number of receive descriptors pointing to buffers in the computer system available for receiving data from the network.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers comprising:

a. Monitoring the number of receive descriptors pointing to buffers in the computer system available for receiving data from the network.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of descriptors to monitor the available buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

27. Regarding claim 20, Chong et al. (USPN 6,212,582) teach all the limitations as applied to claim 19. They further teach means wherein the automatic flow control mechanism is configured to enable a remote station to resume data transmission when the available buffer capacity rises above a second threshold value (column 4, lines 26-30; column 7, lines 27-30).

Although the system disclosed by Chong et al. (USPN 6,212,582) shows substantial features of the claimed invention, it fails to disclose means for monitoring the number of available descriptors.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582), as evidenced by Fox (USPN 6,185,438).

In an analogous art, Fox (USPN 6,185,438) discloses a system for flow control based on the availability of receive buffers utilizing descriptors for the representation of buffer status.

Given the teaching of Fox (USPN 6,185,438), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of descriptors to monitor the available buffers. This allows an accurate picture of the buffer availability to be analyzed by the system processor. This benefits the system by making the changing of threshold and time values central for all buffers instead of requiring that it be done for each individual buffer.

28. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chong et al. (USPN 6,212,582) and Fox (USPN 6,185,438) as applied to claim 17 above, and further in view of Ramakrishnan (USPN 6,167,029).

29. Regarding claim 18, although the system disclosed by Chong et al. (USPN 6,212,582) and Fox (USPN 6,185,438) (as applied to claim 17) shows substantial features of the claimed invention, it fails to disclose means wherein the automatic flow control mechanism is configured to enable the remote station to resume data transmission after a preprogrammed time interval, if the number of available descriptors is not less than the preprogrammed threshold value.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Fox (USPN 6,185,438), as evidenced by Ramakrishnan (USPN 6,167,029).

In an analogous art, Ramakrishnan (USPN 6,167,029) discloses a system for activation of flow control based on the availability of buffers wherein the automatic flow control mechanism is configured to enable the remote station to resume data transmission after a preprogrammed time interval, if the number of available descriptors is not less than the preprogrammed threshold value (column 8, lines 28-33). Note that the PAUSE frame is set for a pre-determined period of time, after which flow resumes regardless of the status of the buffers.

Given the teaching of Ramakrishnan (USPN 6,167,029), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of a timer to determine when transmission from the transmitting node can resume. In a system where processing of incoming data takes place at a constant rate, it is not necessary to have a buffer notify the transmitting node when it is below a certain threshold. In this situation, the transmitting node can wait a pre-determined time and then resume transmission with a high certainty level of finding the buffer in a level below the threshold. The system benefits by not having to spend processor time measuring the lower threshold of the buffer and then sending a message to the transmitting node. This saves processor time and network congestion. The benefit of having both the lower threshold and the time-based resumption of transmission can be used to differentiate between buffers utilized for different purposes. Those in extremely high traffic and critical applications may need to use the former, the lower priority applications may use the time-based method.

30. Regarding claim 21, although the system disclosed by Chong et al. (USPN 6,212,582) and Fox (USPN 6,185,438) (as applied to claim 19) shows substantial features of the claimed invention, it fails to disclose means wherein the automatic flow control mechanism is configured

to enable the remote station to resume data transmission after a preprogrammed time interval, if the number of available descriptors is not less than the preprogrammed threshold value.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Chong et al. (USPN 6,212,582) and Fox (USPN 6,185,438), as evidenced by Ramakrishnan (USPN 6,167,029).

In an analogous art, Ramakrishnan (USPN 6,167,029) discloses a system for activation of flow control based on the availability of buffers wherein the automatic flow control mechanism is configured to enable the remote station to resume data transmission after a preprogrammed time interval, if the number of available descriptors is not less than the preprogrammed threshold value (column 8, lines 28-33). Note that the PAUSE frame is set for a pre-determined period of time, after which flow resumes regardless of the status of the buffers.

Given the teaching of Ramakrishnan (USPN 6,167,029), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Chong et al. (USPN 6,212,582) by employing the use of a timer to determine when transmission from the transmitting node can resume. In a system where processing of incoming data takes place at a constant rate, it is not necessary to have a buffer notify the transmitting node when it is below a certain threshold. In this situation, the transmitting node can wait a pre-determined time and then resume transmission with a high certainty level of finding the buffer in a level below the threshold. The system benefits by not having to spend processor time measuring the lower threshold of the buffer and then sending a message to the transmitting node. This saves processor time and network congestion. The benefit of having both the lower threshold and the time-based resumption of transmission can be used to differentiate between buffers utilized for

different purposes. Those in extremely high traffic and critical applications may need to use the former, the lower priority applications may use the time-based method.

Conclusion

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see the following:

a. Daines et al. (USPN 6,192,422) – Repeater with flow control based on buffer thresholds.

b. Kilkki et al. (USPN 6,081,843) – Flow control using two thresholds for buffer occupancy.

c. Chong et al. (USPN 6,212,582) (USPN 5,983,278) – System for flow control based on multiple thresholds for buffer capacity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Parton whose telephone number is (703)306-0543. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (703)305-4792. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-9242 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Kevin Parton
Examiner
Art Unit 2153

ksp
September 30, 2002

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